

SECTION A (40 Marks)
*Compulsory: Attempt **all** questions.*

Question 1

- (a) **Directions:** *For each question, there are four alternatives A, B, C and D. Choose the correct alternative and circle it. Do not circle more than ONE alternative. If there are more than one circled, NO score will be awarded.*

[15]

- (i) The cell organelle responsible for the secretion of enzymes and hormones is
A ribosome.
B centrosome.
C mitochondria.
D golgi apparatus.
- (ii) A phenomenon whereby living or dead plant cells absorb water by surface attraction is known as
A active transport.
B imbibition.
C diffusion.
D osmosis.
- (iii) The following organelles are involved in the synthesis of protein **EXCEPT**
A nucleoli.
B ribosome.
C lysosome.
D endoplasmic reticulum.
- (iv) During the day time, the stomata are wide open primarily for the intake of
A carbon dioxide.
B water vapour.
C nitrogen.
D oxygen.
- (v) Which of the following does **NOT** affect the rate of photosynthesis?
A humidity
B temperature
C light intensity
D CO₂ concentration

- (vi) The part of the brain which control the activities of the internal organs is
A medulla oblongata.
B cerebellum.
C spinal cord.
D cerebrum.
- (vii) The seminal vesicles produce a secretion which
A produces sperms.
B acts as a lubricant.
C is alkaline to neutralize the acid.
D acts as a medium to transport sperms.
- (viii) Which of the following describes demography?
A number of individuals per square kilometer at any given time
B number of live births per 1000 people of population per year
C number of deaths per 1000 people of population per year
D statistical study of human population
- (ix) RR is the genotypic representation of a tongue roller for
A homozygous recessive.
B homozygous dominant.
C heterozygous dominant.
D homologous chromosome.
- (x) Exophthalmic goiter is caused by the over activity of
A thymus.
B thyroid.
C parathyroid.
D adrenal cortex.

- (xi) Chemical substances produced by some microorganisms to inhibit the growth of other microorganisms are called
- A disinfectants.
 - B antiseptics.
 - C antibiotics.
 - D antitoxins.
- (xii) Which of the following is *NOT* a part of the female reproductive system?
- A ovary
 - B ureter
 - C uterus
 - D fallopian tube
- (xiii) The part of the internal ear responsible for dynamic equilibrium of our body is the
- A semicircular canal.
 - B eustachian tube.
 - C ear drum.
 - D cochlea.
- (xiv) When a plant cell is placed in a certain solution it gets plasmolysed. What is the nature of the solution?
- A neutral solution
 - B isotonic solution
 - C hypotonic solution
 - D hypertonic solution
- (xv) Stroma is a ground substance present in the
- A chromosome.
 - B protoplasm.
 - C chloroplast.
 - D cytoplasm.

(b) **Fill in the blanks with the correct form of word/s.** [5]

- (i) The gestation period in humans is for about days.
- (ii) is the part of brain which maintains body balance.
- (iii) Meiosis produces number of chromosomes in daughter cells.
- (iv) The special pores present in the margin of the leaf that allows guttation are called
- (v) An international body responsible for the removal of human suffering at all times is the

(c) **Match the items of Column A with the most appropriate items of Column B. Rewrite the correct matching pairs in the spaces provided.** [5]

Column A	Column B
1. Telophase	(a) quarantine measures
2. WHO	(b) pink cobalt chloride
3. Transpiration	(c) nuclear membrane reappears
4. Sperm duct	(d) blue cobalt chloride paper
5. Xylem	(e) seminiferous tubules
	(f) downward conduction of food
	(g) nuclear membrane disappears
	(h) vas deference
	(i) upward conduction of water
	(j) prevention of accidents

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(d) **Write TRUE or FALSE for the following statements. Rewrite the false statements in the correct forms by changing only the underlined words.** [6]

- (i) Phenotype is the expressed character.

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(ii) The hormone thyroxine helps to face fear.

(iii) Salk's vaccine is used to cure tuberculosis.

(iv) The cell wall of the root cell is freely permeable.

(v) Numerous stomata allow rapid exchange of gases.

(vi) Tubectomy is the surgical method of sterilization in human males.

(e) *Give reasons for the following:*

[5]

(i) White blood cells are called phagocytes.

(ii) Haemophilia is more common in males than in females.

(iii) Hypersecretion of insulin causes diabetes mellitus.

(iv) A dog runs away when he sees a person bending down.

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(v) The acrosome of the sperm facilitates the entry of sperm into the egg.

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(f) (i) Give any **one** merit of local defence system over immune system. [1]

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(ii) Write down **two** examples of natural reflex. [1]

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(iii) Is family planning an advantage or a disadvantage to a nation? Justify your answer with **two** reasons. [2]

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SECTION B (40 Marks)

Attempt any four questions

Question 2.

- (a) Write down **one** point of difference between each of the following pairs on the basis of what is given in brackets in the table given below.

[4]

- (i) Lenticular transpiration and cuticular transpiration (*site of transpiration*)

Lenticular transpiration	Cuticular transpiration

- (ii) Sympathetic nervous system and parasympathetic nervous system (*function*)

Sympathetic nervous system	Parasympathetic nervous system

- (iii) Vacuoles and granules (*function*)

Vacuoles	Granules

(iv) Endosmosis and exosmosis (*movement of water*)

Endosmosis	Exosmosis

(b) Lhakpa crossbreed a pea plant using round (RR) and wrinkled (rr) seeds.

Workout the genotypic and phenotypic ratio of the offsprings in F₂ generation with the help of punnet square.

[2]

(c) Explain briefly the following terms:

[4]

(i) Antibiotics

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(ii) Immunity

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(iii) Law of dominance

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(iv) Ovulation

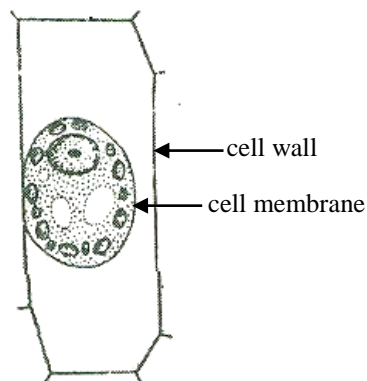
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Question 3.

- (a) A cell from the leaf of an aquatic plant was placed in a liquid. After sometime, it assumed a shape as shown below:



- (i) Name the phenomenon shown in the diagram.

[1]

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(ii) Define the phenomenon named above. [1]

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(iii) When the cell is placed in distilled water, it regains its normal size. Why? [2]

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(iv) Draw the diagram of the cell as described in (iii). [1]

(b) Name the following: [4]

(i) The part of the chloroplast where the light reaction of photosynthesis takes place.

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(ii) The kind of immunity by virtue of genetic constitutional make-up.

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(iii) The point of contact between the terminal branches of the axon of a neuron with the dendrites of another neuron.

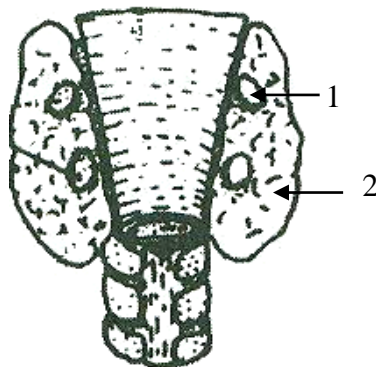
(iv) The part of the brain which regulates the body temperature.

(c) Write **two** factors responsible for population explosion. [1]

Question 4

(a) List down **two** main activities of Red Cross. [2]

(b) Given below is the portion of a human endocrine system showing a few structures.



(i) Where is it located in the body? [1]

(ii) Name the parts numbered 1 and 2. [1]

(iii) Name the important hormone secreted by 1. [1]

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(iv) What is the deficiency disease caused by the hyposecretion of 1 in children? [1]

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(c) (i) Draw a neat diagram to represent metaphase of mitotic cell division in an animal cell and label the following parts: [2]

1. Centrosome

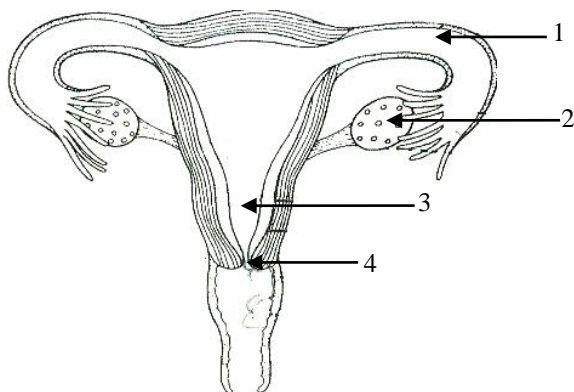
2. Spindle fibre

(ii) Mention *two* points of difference between mitosis in plant cell and an animal cell in the table given below. [2]

Plant cell	Animal cell

Question 5.

- (a) The figure given below represents the female reproductive system.



- (i) Name the parts labelled 1 to 4. [2]

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- (ii) Give the function of the part labelled 3. [1]

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- (iii) Where does fertilization takes place? [1]

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- (ii) What happens to the part labelled 2, if fertilization fails to take place? [1]

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- (b) (i) 'Before conducting an experiment on photosynthesis, the plant is kept in the dark for 24 hours'. Why? [1]

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(ii) What is photolysis in photosynthesis? [1]

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(iii) 'Too much light destroys chlorophyll'. Do you agree with this statement?

Justify.

[2]

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(c) 'Nucleus is the key performer of the cell'. Explain.

[1]

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Question 6.

(a) Correct the statement given below by changing the underlined words.

[2]

(i) Mucus secreted by the stomach kills germs that enter along with the food.

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(ii) The direct way to throw out germs or any foreign objects which gets into the respiratory system is the saliva.

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(b) (i) Draw a neat diagram of an internal structure of human eye and label the following parts: [3]

1. retina
2. lens
3. vitreous humour
4. aqueous humour

(ii) Give *one* function of rods and cones. [2]

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(c) (i) Explain how rising population affect food and forest resources? [2]

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- (ii) Give *two* adaptations in plants to reduce excessive transpiration. [1]

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Question 7.

- (a) Give suitable explanations for the following: [6]

- (i) Smallness of a cell has a greater efficiency.

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- (ii) Some people have difficulty in seeing at night.

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- (iii) The sex of a child does not depend on the father.

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- (iv) High root pressure and low rate of transpiration causes guttation.

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- (v) Leaves of some plants wilt during mid-day and recover in the evening.

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(vi) In adults, excess secretion of growth hormone leads to serious consequences.

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(b) (i) We are advised to apply soap water when stung by wasp. Why? [1]

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(ii) What is the first-aid provided, when a person swallows poison? [1]

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(c) Both hormonal and surgical methods are contraception for family planning.
Yeshi opts for hormonal method and Lhaki surgical method. Which method
do you feel is better for family planning? Support your answer with two reasons. [2]

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